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| APPLICATION NO.               | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------------|-------------|----------------------|---------------------|------------------|
| 10/566,983                    | 11/19/2007  | Zamir Tribelsky      | P-7784-US           | 2858             |
| 49443                         | 7590        | 05/11/2011           | EXAMINER            |                  |
| Pearl Cohen Zedek Latzer, LLP |             |                      | COLEMAN, RYAN L     |                  |
| 1500 Broadway                 |             |                      | ART UNIT            |                  |
| 12th Floor                    |             |                      | PAPER NUMBER        |                  |
| New York, NY 10036            |             |                      | 1714                |                  |
|                               |             |                      | NOTIFICATION DATE   | DELIVERY MODE    |
|                               |             |                      | 05/11/2011          | ELECTRONIC       |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@pczlaw.com  
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|                              |                                      |   |  |
|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/566,983 | <b>Applicant(s)</b><br>TRIBELSKY ET AL. |  |
|                              | <b>Examiner</b><br>RYAN COLEMAN      | <b>Art Unit</b><br>1714                 |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 February 2011.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 9, 10, 18, 19, 25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-5, 9, 10, 18, 19, 25, and 26 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/25/2010 and 03/01/2011</u> .                               | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

1. Applicant's amendments filed February 25, 2011 are acknowledged. Claims 6-8, 11-17, 20-24, and 27-34 have been cancelled. Claims 1-5, 9, 10, 18, 19, 25, and 26 are pending.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-5, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2001/0037819 by Mitsumori et al. (hereafter referred to as "Mitsumori").

6. With regard to claims 1 and 5, Mitsumori teaches a method of treating a surface (reads on *destination site*) of a substrate that involves guiding ultraviolet light through a treatment liquid (Par. 0018, 0022, 0024, 0074, 0204, 0540, 0541; Figures 25A and 25B). In Mitsumori's method, ultraviolet light having predetermined output and wavelength (read on *predetermined parameters*) is projected from two pulsed excimer lasers (items 380 in Figure 25A; reads on *ultraviolet energy source*) such that the projected light is directed along a stream of liquid that contacts the surface of the treated substrate (Par. 0024, 0074, 0204, 0540, 0541). The stream of liquid flows through a crossing section (seen in cross-section as item 114 in Figure 25A), which is considered to read on applicant's pipe because as shown in Figures 25A and 25B, it is a hollow body for conducting a liquid. Mitsumori teaches that the outside of the crossing section is surrounded by air (Par. 0152 and 0154; Figures 25A and 25B).

7. In the embodiment discussed, Mitsumori does not explicitly teach that the body of the crossing section contains quartz.

8. In a similar embodiment, Mitsumori teaches that such surfaces that are in contact with the treatment liquid preferably comprise quartz (Par. 0301).

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9. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the discussed method of Mitsumori by having the hollow body forming the crossing section comprise quartz. The motivation for performing the modification was provided by Mitsumori, who taught that it is advantageous to have such liquid-contacting surfaces comprise quartz.

10. In the method of Mitsumori developed thus far, Mitsumori does not explicitly teach that the stream of liquid has a predetermined flow rate.

11. In a similar embodiment, Mitsumori teaches that it is advantageous to have the flow rate of such a liquid stream be predetermined because the flow rate of liquid through such a crossing section affects the pressure that the liquid exerts at the treated surface (Par. 0382).

12. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the developed method of Mitsumori by flowing the stream of liquid through the crossing section at a predetermined flow rate. The motivation for performing the modification was provided by Mitsumori, who taught that having such a flow rate be predetermined is advantageous because the flow rate affects the pressure that the liquid exerts at the treated surface.

13. Further with regard to claim 1, this developed method of Mitsumori does not explicitly teach that the ultraviolet light directed into the quartz pipe along the stream's trajectory functions to disinfect the liquid, but since this method of Mitsumori teaches performing the same method steps as those claimed by applicant with the same materials as those claimed by applicant, it is reasonably expected that the ultraviolet

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light will function to disinfect the liquid because the ultraviolet light is guided through the liquid. Further with regard to the language of claim 1, as shown in Figure 25A, Mitsumori teaches that a light path between the light irradiating means and the targeted surface is entirely within the crossing section (item 114 in Figure 25A).

14. With regard to claims 2 and 3, in the developed method of Mitsumori, Mitsumori does not explicitly teach periodically replacing a plurality of surfaces opposite the stream of liquid.

15. In a similar embodiment shown in Figures 19 and 20, Mitsumori teaches moving the treatment liquid stream relative to the treated substrate such that surfaces of the substrate are periodically replaced opposite the liquid stream, and as a result, a large portion of the substrate that includes multiple such surfaces can be treated with the liquid (Par. 0390; Figures 19 and 20).

16. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the developed method of Mitsumori by periodically replacing a plurality of surfaces opposite the liquid stream by relatively moving the liquid stream along a plurality of surfaces of the substrate such that the stream contacts each of those surfaces. The motivation for performing the modification was provided by Mitsumori, who teaches that performing such relative movement of the liquid stream and the substrate advantageously allows a large portion of the substrate to be treated with the liquid.

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17. With regard to claim 4, since the method of Mitsumori is performed in order to wash the substrate (Par. 0204), it is reasonably expected that the treated substrate is suspected as afflicted by chemical species.

18. With regard to claim 10, Mitsumori teaches using excimer lasers as the light irradiating means, and since excimer lasers irradiate light at certain ultraviolet wavelengths, excimer laser light in Mitsumori's method is considered to be irradiated at a predetermine wavelength (Par. 0074).

19. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2001/0037819 by Mitsumori as applied to claim 1 above, and further in view of U.S. Patent Application Publication No. 2005/0081881 by Skeidsvoll et al. (hereafter referred to as "Skeidsvoll").

20. With regard to claim 9, Mitsumori teaches using ultraviolet lasers as a light source used to perform the treating.

21. Mitsumori does not explicitly teach using a 266 nm or 355 nm laser as a light source.

22. Skeidsvoll teaches a method of treating a surface that involves exposing the treated surface to ultraviolet 355 nm radiation from a pulsed Nd:YAG laser (Par. 0020-0024). Skeidsvoll teaches exposing the surface to such 355 nm radiation advantageously allows undesired deposits to be removed from the treated surface (Par. 0022).

23. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mitsumori by using a pulsed ultraviolet 355 nm

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Nd:YAG laser as a light source in his method of treating a surface. The motivation for performing the modification was provided by Mitsumori, who taught using an ultraviolet laser as a light source for performing the treatment, and by Skeidsvoll, who taught that a pulsed ultraviolet 355 nm Nd:YAG laser can advantageously be used to remove undesired deposits from an exposed surface.

24. Claims 18 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2001/0037819 by Mitsumori as applied to claim 1 above, and further in view of U.S. Patent Application Publication No. 2002/0129833 by Drzal et al. (hereafter referred to as "Drzal").

25. With regard to claims 18 and 19, Mitsumori teaches that the two irradiating means (items 380 in Figures 25A and 25B) may be different (Par. 0541).

26. Mitsumori does not teach using ultraviolet light energy in the continuous wave form.

27. Drzal teaches that when cleaning a surface with ultraviolet light, an ultraviolet lamp can advantageously be used to emit continuous wave ultraviolet radiation such that the surface is cleaned with the continuous wave radiation (Par. 0004, 0014, 0015, 0035, and 0040).

28. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mitsumori by substituting one of the pulsed excimer lasers (items 380 in Figures 25A and 25B) with an ultraviolet lamp that emits continuous wave ultraviolet radiation (MPEP 2141, Rationale B, *Simple Substitution of One Known Element for Another to Obtain Predictable Results*). The motivation for performing the



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modification was provided by Drzal, who taught that when cleaning a surface with ultraviolet light, an ultraviolet lamp can advantageously be used to emit continuous ultraviolet radiation such that the surface is cleaned with the continuous wave radiation. Specifically, with regard to claim 19, in this combination of Mitsumori in view of Drzal, one of the light sources is a pulsed excimer laser and the other is an ultraviolet lamp, and therefore, there is considered to be a combination of pulsed and continuous ultraviolet radiation.

29. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2001/0037819 by Mitsumori as applied to claim 1 above, and further in view of U.S. Patent No. 5,151,134 to Boquillon et al. (hereafter referred to as "Boquillon").

30. With regard to claims 25 and 26, Mitsumori does not teach monitoring the emitted energy between a pulsed laser and the treated surface.

31. Boquillon teaches that when using a pulsed laser to treat a surface, it is advantageous to monitor the repetition frequency of the laser pulses emitted by the laser onto the surface in order to adjust the power irradiated on the targeted surface such that the desired level of power is irradiated onto the targeted surface (Abstract; Col. 1, 5-10; Col. 3, 45-59).

32. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mitsumori by monitoring the repetition frequency of the laser pulses emitted by a laser. The motivation for performing the modification was provided by Boquillon, who taught that it is advantageous to monitor the repetition

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frequency of laser pulses emitted by a laser onto a laser-treated surface in order to adjust the power irradiated on the targeted surface such that the desired level of power is irradiated onto the targeted surface.

### ***Response to Arguments***

33. Applicant's arguments filed February 25, 2011 have been fully considered but they are not persuasive.

34. Applicant argues that Mitsumori's crossing section (item 114 in Figure 25A) cannot be considered a pipe. In the non-final rejection dated August 31, 2010, the examiner stated that the crossing section is considered a pipe because as shown in Figures 25A and 25B, it is a hollow body for conducting a liquid. Applicant argues that "pipe" is a well-defined dictionary term wherein the regular meaning of the term "pipe" is a long hollow tube for conducting a fluid. However, Merriam-Webster's Collegiate Dictionary (10th edition, 1999) defines a pipe as "a long tube or hollow body for conducting a liquid, gas, or finely divided solid or for structural purposes". The examiner still considers the Mitsumori's crossing section to be a pipe because it is a hollow body for conducting a liquid.

### ***Conclusion***

35. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

36. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN COLEMAN whose telephone number is (571)270-7376. The examiner can normally be reached on Monday-Friday, 9-5.

38. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

39. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RLC/

Ryan L. Coleman

Patent Examiner, Art Unit 1714

May 5, 2011

/Michael Kornakov/

Supervisory Patent Examiner, Art Unit 1714